framatome

Valve Qualification by Testing

Test Facilities for Valve Qualification

Comprehensive test facilities for effective and cost-optimized qualification of valves

Challenge

Valve qualification requires well equipped laboratories, powerful test facilities, qualified personnel and a demanding quality management system for cost effective test campaigns.

Solution

Framatome operates various test facilities that are used to qualify all types of valves according to different international standards and customer specifications. We perform cycling tests, thermal cycling, high energy pipe break (HEPB) tests, as well as active water with debris tests (AWD).

The 2 test loops APS and SVAT are dedicated to cycling tests. The automatization of the loops enables 24/7 test campaigns to rapidly reach 500 or 1,000 cycles depending on the specifications. The nominal diameter of the loops enables to reach 5 m/s flow velocity for nominal diameters up to DN300 and larger. The SAVT test facility can be connected to a “cold loop” in order to perform thermal cycling tests.

We preform HEPB tests on 3 different pressurizers depending on the size of the valve and the pressure to be tested. HEPB test can be performed under different medium states (steam, subcooled water, etc.).

3 test loops with different DN (DN25, DN100 and DN250) are available for AWD test.

End loading test can also be performed on demand.

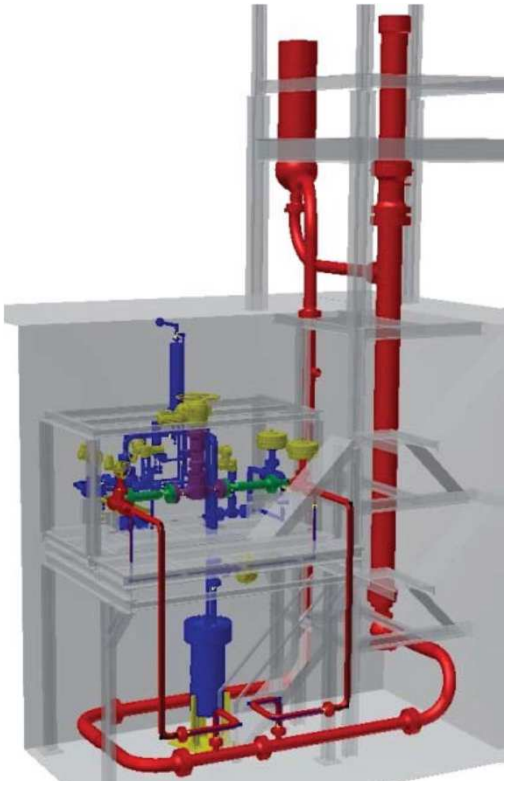
Our laboratories provide the complete infrastructure to perform all additional tests required during a qualification campaign such as tightness tests, operational tests and inspection of the valves.

The chemical properties of the medium can be adjusted to mimic operational conditions, including the addition of chemicals such as LiOH or boric acid.

Our experience and test capabilities assure a cost optimized and reliable qualification test campaign.

Customer benefits

- Full scale test facilities with respect to flow velocity temperature and pressure for significant test results
- Personnel with long experience in valves for an optimal performance and support of the tests
- Limited interfaces for cost optimized qualification test performance due to comprehensive qualification test loops
- Reliable test results through accreditation as test and inspection body in accordance with ISO 17025 and 17020, accepted by ILAC



Overview of thermal shock and cycling test loop

Your performance
is **our** everyday **commitment**

Technical information

Test parameters for cycling tests

- Pressure: up to 175 bar
- Temperature: up to saturation
- Nominal flow rate: > 2,000 m³/h (5 m/s for DN300)
- Test-section installation length: 4.7 m
- Nominal diameters: up to DN 500
- Flange connections to the test loop DN200, PN250

Test parameters for thermal cycling tests

- Delta T of 270 °C

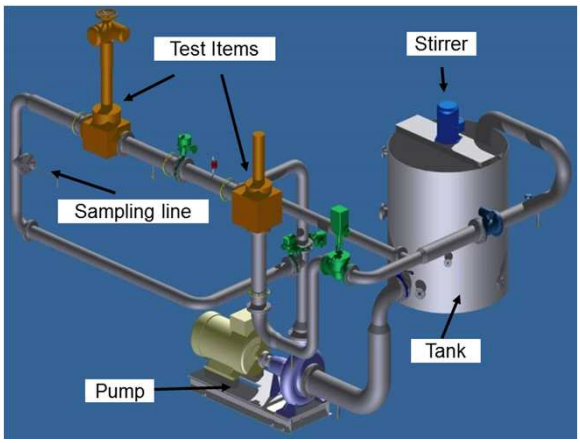
Test parameters for AWD tests

- Pressure head: up to 9 bar(g)
- Operating temperature: up to 80°C
- Flow rate: up to 1,000 m³/h
- Nominal diameters: up to DN 300
- Operating pressure: up to 16 bar
- Test facility made from stainless steel

Test parameter for HEPB tests

Test Loop	"VPE"	"GAP"	"VDH"
Pressure	15.5 MPa	11.6 MPa	19.4 MPa
Temperature	400 °C	Saturation (322 °C)	Saturation (364 °C)
DN	DN 250	DN 250, 400 or 700	DN50
Achievable flowrates (exemplarily)	200 kg/s (saturated steam at 8.5 MPa)	2,000 kg/s (sat. steam at 8.0 MPa) 4,000 kg/s (two phase) 1,300 kg/s (cold water)	400 kg steam

DN350 specimen mounted on the test loop



Overview of AWD test loop

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